

SOME SPERMATOPHYTES OF EASTERN
NORTH AMERICA

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(Continued from page 276)

RUBUS PARVIFLORUS Nutt.—a Confession.

Professor Bailey calls my attention to a humiliating error. On p. 275 I rejected *R. parviflorus* Nutt., stating that I had overlooked "the very simple fact that the latter is a later homonym of *R. parviflorus* L. Sp. Pl. 1197 (1753)." The actual fact, most unfortunately, is that the Linnean species was *R. parvifolius*. *R. parviflorus* Nutt. is the valid name for the North American species.

RUBUS HISPIDUS L., var. **obovalis** (Michx.), comb. nov. *R. obovalis* Michx. Fl. Bor.-Am. i. 298 (1803).

True *Rubus hispidus* L., as shown by Bailey in *Gentes Herbarum*, i. 174, fig. 77 (1923), is the coarse extreme of the species, with copiously setose primocanes and petioles. It is in part *R. hispidus*, var. *major* Blanchard in *RHODORA*, viii. 213 (1906), Blanchard taking the less bristly and more slender *R. obovalis* as his *R. hispidus*. I distinguish the two as follows:

R. HISPIDUS L. (typical). Canes woody, the stronger portions 2–5 mm. in diameter; primocanes with 300–2000 bristles and glands on a dm. of the median and terminal growth; petioles of principal new primocane-foilage with 100–500 bristles; terminal leaflet of primocanes 2.5–7 cm. long, 2–5.5 cm. broad.

Var. **OBOVALIS**. More slender; canes weaker, mostly 1–2 mm. in diameter, quite smooth or with only 1–100 bristles per dm.; petioles of primocane-foilage smooth or with 1–rarely 100 bristles; terminal leaflet 1.5–4.5 cm. long, 1–3.5 cm. broad.

The slender var. *obovalis* is wider-ranging and extends farther south than the coarser and more bristly typical *R. hispidus*. I have studied the material in the Gray Herbarium and the herbaria of the New England Botanical Club and of the National Museum of Canada. These collections give the following results.

	Typical HISPIDUS	Transi- tion	Var. OBO- VALIS
So. Quebec and so. Ontario	14	0	5
Prince Edward Island and New Brunswick	8	0	0
Nova Scotia	6	2	12
Maine, New Hampshire and Vermont	50	4	55
Massachusetts	13	2	72
Rhode Island and Connecticut	3	1	17

	Typical HISPIDUS	Transi- tion	Var. OBO- VALIS
New York	4	5	4
New Jersey	2		7
Virginia	1		5
North Carolina	0		2
Ohio	0		1
West Virginia	0		1
Indiana	0		2
Michigan	1		0

RUBUS, subg. EUBATUS, § **Tholiformes**, nom. nov. § *Hispidi*, ser. *Jacentes* Bailey, *Gentes Herbarum*, i. 248 (1925). § *Jacentes* Bailey, *ibid.* ii. 300, 346 (1932).

True *Rubus jacens* Blanchard in *Torrey*, vi. 147 (1906), is, as originally stated by Blanchard, a small member of the *Hispidi*, with slender canes trailing, and elongating to about 1 m. It is a local plant of dry clearings and pastures from the warm Connecticut Valley of southwestern New Hampshire (tobacco country) to southeastern New York and eastern Pennsylvania. The coarse arching or doming plant, so abundant in Nova Scotia and in the White Mountain region, thence extending northward into Quebec and west across northern New York, not only makes complex domes, with arching to ascending primocanes, but its long curving branches, reaching the ground, trail for 2–3 meters and then root. This coarse plant, misidentified by Brainerd and Peiterson (*Blackberries of New England*, Vt. Agric. Expt. Sta. Bull. 217: 77 (1920)) and later by Bailey (in including the Nova Scotian plant) is very unlike true *R. jacens*. It is the species I am calling *R. adjacens*. Since I can hardly place *R. jacens* in a section apart from the equally depressed *R. hispidus* Michx., *R. vigil* Bailey and *R. cubitans* Blanchard, and since *R. adjacens* has the coarser and doming habit of *R. permixtus* Blanchard, *R. arcuans* Fern. & St. John, *R. tardatus* Blanchard, *R. severus* Brainerd, and *R. novanglicus* Bailey (members of § *Jacentes*, as treated by Bailey) this doming and arching section can hardly be called § *Jacentes* (based on *R. jacens*). On account of the arching or doming habit of growth, the chief diagnostic character of the section, which separates it, on the one hand, from the prostrate § *Hispidi* Rydb., on the other from § *Setosi* Bailey, erect plants without long-arching and tip-rooting canes, I am renaming § *Jacentes* as defined by Bailey, l. c., and basing the



Photo. H. G. Fernald.

RUBUS THOLIFORMIS: FIG. 1, characteristic primocane-leaf, $\times 1$; FIG. 2, summit of petiole and bases of leaflets, $\times 5$; FIG. 3, lower surface of leaflet, $\times 10$.



Photo. H. G. Fernald.

RUBUS THOLIFORMIS: FIG. 1. portions of floricanes and inflorescences, $\times 1$; FIG. 2, flowers and pedicels, $\times 5$; FIG. 3, portion of primocane, $\times 3$.

name on the characteristic doming *R. tholiformis*, which admirably displays the habit of the section.

RUBUS (EUBATUS, § THOLIFORMES) **tholiformis**, sp. nov. (TAB. 606 et 607), valde arcuans cannis tholos formantibus, cannis vel ramis ad 1 m. longis apice saepe radicanibus; primocannis 3–7 mm. diametro densissime griseo- vel fusco-glandulosis setosisque, setis divergentibus 1–2 mm. longis aculeiformibus subrigidis; primocannae foliis quinatis ternatisve chartaceis pallidis opacis glabris, costis subtus prominulis pilosis; foliolis elliptico-ovalibus plerumque basi apiceque acuminatis duplicato-serratis; foliolo terminali 7–11 cm. longo 3.5–6.5 cm. lato basi subrotundato petiolulo glandulifero setosoque 1.2–2.4 cm. longo; floricannae foliis ternatis, foliolis obovatis vel late ovatis acutis anguste serrato-dentatis; inflorescentiis corymbosis vel corymbosoracemosiis rhachis pedicellis calycibusque griseo-villosis; bracteis saepe trifidis; pedicellis subadscendentibus 1–2 cm. longis glandulosis plus minusve setosis; calycis glanduloso-setosis, lobis brevibus deinde reflexis; petalis 0.5–1 cm. longis, 3–4 mm. latis; fructibus subglobosis 1–1.3 cm. diametro.—Abundant in Coös County, NEW HAMPSHIRE: sandy terraces of Connecticut River, Stewartstown, September 4, 1917, *Fernald & Pease*, no. 15,600; damp or springy thickets, Colebrook, July 18 and 19, 1917, *Fernald & Pease*, no. 15,723, September 3, 1917, *Fernald & Pease*, nos. 15,604 and 15,605; dry bushy hillside, Colebrook, September 3, 1917, *Fernald & Pease*, no. 15,661; sandy plains, thickets and roadsides, Stratford, July 18, 1917, *Fernald & Pease*, nos. 15,724, 15,728 and 15,729, September 3, 1917, *Fernald & Pease*, no. 15,666; damp alluvial thicket (by Connecticut River), Northumberland, July 18, 1917, *Fernald & Pease*, no. 15,722, September 3, 1917, *Fernald & Pease*, no. 15,784; boggy thickets and clearings, Lancaster, July 18, 1917, *Fernald & Pease*, no. 15,817; sandy roadside, Millsfield, September, 5, 1917, *Fernald & Pease*, no. 15,658; alluvial thicket by Androscoggin River, Errol, September 5, 1917, *Fernald & Pease*, no. 15,783; bushy swales and borders of woods, Randolph, July 18, 1917, *Fernald & Pease*, no. 15,733 (TYPE in Herb. Gray), August 8, 1917, *Fernald & Pease*, no. 15,666. All distributed erroneously as *R. frondisensis* Blanchard.

Rubus tholiformis, identified by the late Ezra Brainerd as *R. frondisensis* Blanchard, is really very unlike that species in many characters. *R. frondisensis*, of southeastern Vermont and adjacent southwestern New Hampshire, is a stiffly erect species, with hard prickles, and leaves velvety beneath. *R. tholiformis*, separated from it by three-fifths the length of New Hampshire

and by the White Mountain system, has doming canes with tip-rooting branches, the primocanes densely covered with fine setae, the leaves quite glabrous except for the pilose nerves beneath. Superficially *R. tholiformis* suggests *R. aculiferus* of northern New Hampshire, *R. adenocaulis* of Nova Scotia and the following species of northern New Hampshire. *R. aculiferus* and *R. adenocaulis* have the leaves velvety-pilose beneath, the flowers large, with petals mostly 1.3–1.5 cm. long and 5–10 mm. broad. The primocanes of *R. aculiferus* have hard conic-subulate prickles and very few glands, and the petioles and petiolules are strongly prickly and essentially glandless; *R. tholiformis*, with glabrous foliage with heavily glandular and finely setose petioles and petiolules, and with small petals, really has little relationship to it. *R. adenocaulis* shares with *R. tholiformis* the densely glandular and short-setose primocanes but, as noted, its foliage is velvety-pilose beneath, its terminal primocane-leaflets are subcordate and on petiolules 2–4 cm. long (in *R. tholiformis* narrowed to slightly rounded to base and on petiolules only 1.2–2.4 cm. long), its raceme elongate instead of corymbiform, with strongly armed rachis, entire upper bracts, much larger petals and larger fruits. The many characters separating *R. tholiformis* from the following species will be considered in the discussion of that plant.

Rubus tholiformis is so abundant and characteristic in sandy or alluvial thickets, on sand plains or in sandy swamps of the upper Connecticut and upper Androscoggin systems north of and among the northern White Mountains that it should confidently be sought in Essex County, Vermont, Compton County, Quebec and Oxford County, Maine.

PLATE 606, FIG. 1, is a characteristic leaf of a primocane, $\times 1$, from Stratford, Coös County, New Hampshire, *Fernald & Pease*, no. 15,728; FIG. 2, junction of primocane-leaflets, $\times 5$, from Stewartstown, New Hampshire, *Fernald & Pease*, no. 15,600; FIG. 3, lower surface of primocane-foliage, $\times 10$, from no. 15,728. In PLATE 607, FIG. 1 is a flowering branch, $\times 1$, from Stratford, *Fernald & Pease*, no. 15,729; FIG. 2, flowers and pedicels, $\times 5$, from no. 15,729; FIG. 3, piece of primocane, $\times 3$, from no. 15,728.

RUBUS (EUBATUS, § THOLIFORMES) **spiculosus**, sp. nov. (TAB. 608 et 609), valde arcuans deinde depressis, cannis vel ramibus ad 2 m. longis apicibus prostratis rarissime radicanibus; primocannis 3–6 mm. diametro retrorso-setosis, setis ad 3 mm. longis discretis (100–500 per dm.), glandulis sparsis; primocannae foliis

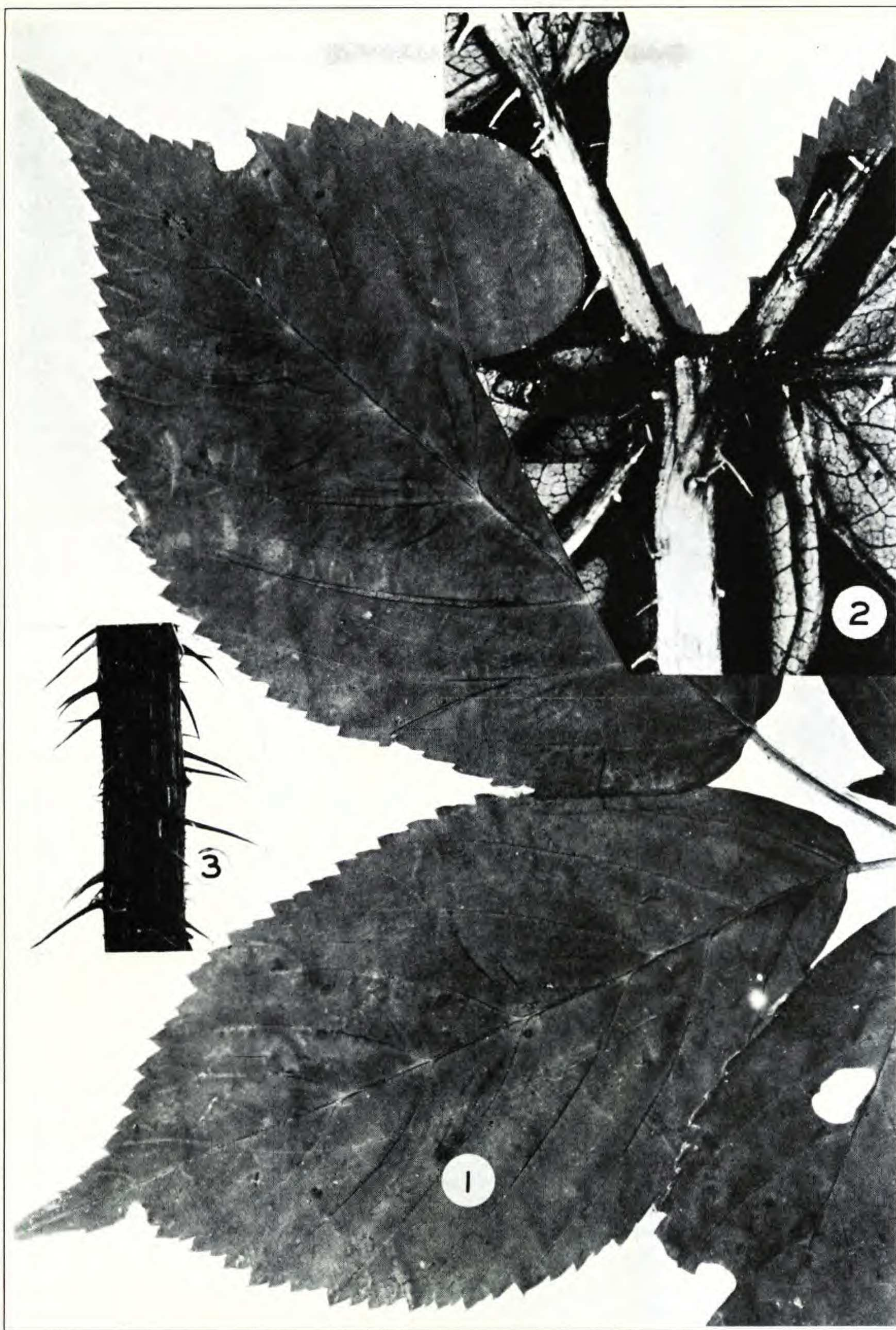


Photo. H. G. Fernald.

RUBUS SPICULOSUS: FIG 1, characteristic primocane-leaflets, $\times 1$; FIG. 2, summit of petiole and bases of leaflets, $\times 5$; FIG. 3, portion of primocane, $\times 3$.



Photo. H. G. Fernald.

RUBUS SPICULOSUS: FIG. 1, tip of flowering shoot, $\times 1$; FIG. 2, calyx and pedicel, $\times 5$.

quinatis firmis pallidis glabris petiolo 6–12 cm. longo sparse setoso vix glandulifero; foliolis elliptico-vel rhomboideo-ovatis longe acuminatis acute serratis costis subtus prominulis glabris vel glabrescentibus; foliolo terminali 7–14 cm. longo 3.5–8 cm. lato saepe subcordato petiolulo sparse setoso 1–3 cm. longo; floricanthae foliis ternatis, foliolis anguste ovatis vel rhomboideo-obovatis acuminatis argute serratis; racemis laxis saepe subcorymbiformibus rhachi pilosi 3–8 cm. longi; bracteis lanceolatis saepe incis; pedicellis laxe patentibus plerumque 2.5–5 cm. longis griseo-pilosis glanduliferis vix setosis; calycis pilosis saepe glandulosis lobis 6–7 mm. longis deinde reflexis; petalis anguste obovatis 1.2–1.5 cm. longis, 5–9 mm. latis; fructibus subglobosis 1.3 cm. diametro.—Northern and central NEW HAMPSHIRE: Coös County: wooded bank of Magalloway River, Errol, September 5, 1917, *Fernald & Pease*, no. 15,678; borders of dry woods near Mascot Pond, Gorham, *Fernald & Pease*, no. 15,659; borders of woods by the carriage road, Mount Washington, at 760 m., August 7, 1917, *Fernald & Pease*, no. 15,774. Grafton County: dry thickets and borders of woods, Lincoln, July 28, 1917, *Fernald*, nos. 15,707, 15,708, 15,795, 15,801, 15,802, 15,815 and 15,816, September 23, 1917, *Fernald*, no. 15,602; sandy roadsides and clearings, Johnson, Lincoln, August 25, 1917, *Fernald*, no. 15,676; borders of dry or wet woods or in alluvial thickets, North Woodstock, Woodstock, July 11, 1915, *Fernald*, no. 11,761; August 7, 1915, *Fernald*, no. 11,745, July 14, 1917, *Fernald*, no. 15,790 (also in Pl. Exsicc. Gray., no. 361), July 31, 1917, *Fernald*, no. 15,718; August 3, 1917, *Fernald*, no. 15,598, August 20, 1917, *Fernald*, no. 15,664, September 12, 1917, *Fernald*, no. 15,791, mature of no. 15,790 (also in Pl. Exsicc. Gray., nos. 362 and 363, primocane and fruit of no. 361); damp thickets, clearings and roadsides, Thornton Gore, Thornton, July 28, 1917, *Fernald*, no. 15,814, August 27, 1917, *Fernald*, no. 15,766 (TYPE in Herb. Gray); dry thickets, clearings, swampy woods and roadsides, Plymouth, August 1, 1917, *Fernald*, nos. 15,595, 15,809 and 15,828. Belknap County: moist sandy thickets and borders of woods, Laconia, August 30, 1917, *Fernald*, no. 15,689; swampy thickets and damp borders of sandy woods, Gilford, no. 15,653. Specimens erroneously distributed as *R. multiformis* Blanchard or as "*R. canadensis* × *setosus*, fide Brainerd."

Just as *Rubus tholiformis* is the abundant pale-leaved and short-bristly doming or arching and finally tip-trailing species in the alluvial thickets and on terraces and sandy roadsides and sand plains of northernmost New Hampshire, so *R. spiculosus* is the superabundant species of similar habit in north-central New Hampshire, overlapping *R. tholiformis* only in eastern Coös

County, but dominating the sandy thickets of the Pemigewasset Valley. *R. tholiformis* has the grayish primocanes densely glandular and with almost innumerable horizontally divergent fine bristles only 1–2 mm. long; *R. spiculosus* has the primocanes greener and glabrous, with few or negligible glands and with scattered reflexed bristles mostly 3 mm. long. In *R. tholiformis* the foliage is chartaceous, with the prominent costae of the lower side strongly pilose; in *R. spiculosus* firmer, with the glabrous or glabrescent costae not specially prominent. In *R. tholiformis* the petioles and petiolules are heavily glandular, in *R. spiculosus* not. In *R. tholiformis* the subascending pedicels are 1–2 cm. long and more or less setose; in *R. spiculosus* the loosely divergent pedicels are mostly 2.5–5 cm. long and scarcely if ever setose. The petals of *R. tholiformis* are narrow, 3–4 mm. wide, and only 5–10 mm. long; in *R. spiculosus* they are showy, 5–9 mm. broad and 1.2–1.5 cm. long. In the silts and gravels of the Upper Connecticut where *R. tholiformis* abounds, lime is relatively abundant; in those of the Pemigewasset it is relatively deficient. These two superficially similar but really very distinct species well illustrate the localization of many species in the genus, many scores or hundreds of them yet to be worked out.

The identification of *Rubus spiculosus* with *R. multiformis* was unfortunate, for the latter species, although with a too catholic specific name, is quite glandless and its racemes are very prolonged. Brainerd's disposition of the many numbers of *R. spiculosus* as "*R. canadensis* × *setosus*" was an easy and ill considered verdict. The most accurate accounts of *R. canadensis* and *R. setosus* (in Bailey, Gent. Herb. ii. fasc. vi) correctly characterize the former as a "Tall upright smooth more or less glossy plant . . . Primocanes erect or upright-arching"; and *R. setosus* as an "erect or strongly ascending blackberry of low stature, . . . not tip-rooting." How, by crossing two species with erect habit constant offspring with long-arching and tip-rooting primocanes could be produced Brainerd did not attempt to explain; he was satisfied to assert that such was the source of *R. spiculosus*. Unfortunately, tentatively accepting his verdict, I long ago distributed all the duplicate material under the patently impossible identification supplied by him. In view of the extensive ranges of both *R. canadensis* (Newfoundland to

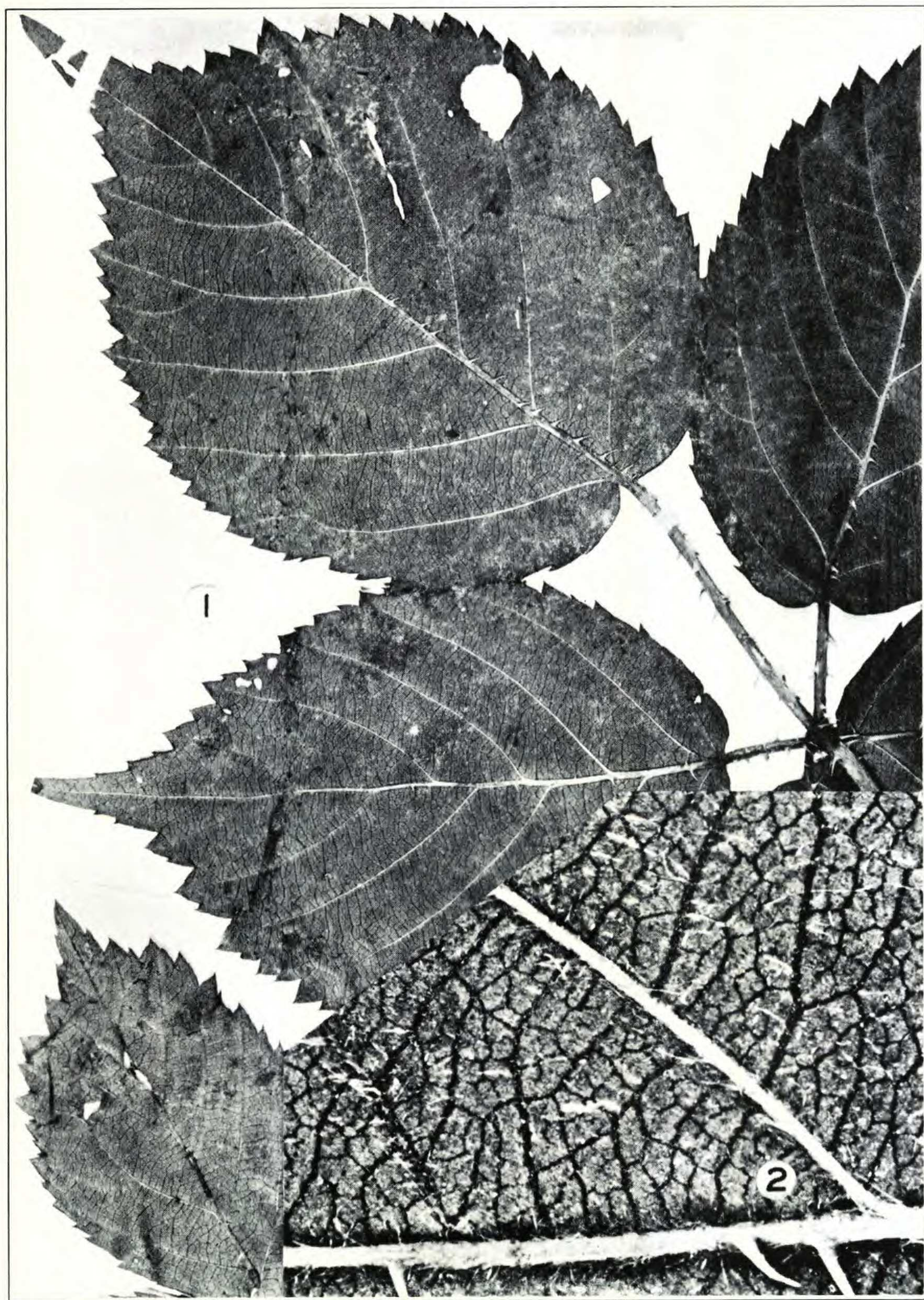


Photo. H. G. Fernald.

RUBUS ACULIFERUS: FIG. 1, characteristic primocane-leaflets, $\times 1$; FIG. 2, lower surface of leaflet, $\times 10$.

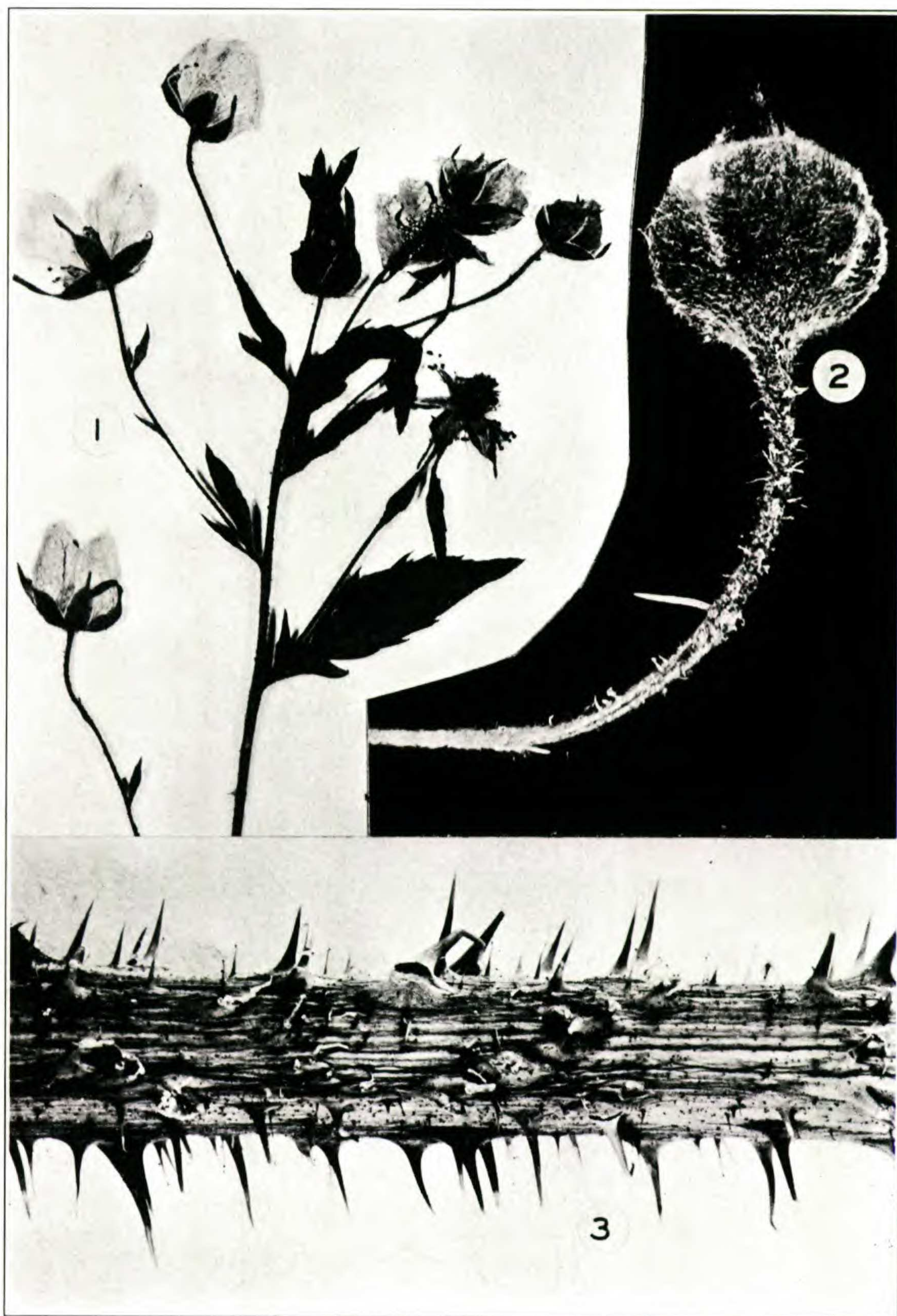


Photo. H. G. Fernald.

RUBUS ACULIFERUS: FIG. 1, portion of raceme, $\times 1$; FIG. 2, calyx and pedicel, $\times 5$; FIG. 3, portion of primocane, $\times 3$.

Ontario, south to New England and New York and along the mountains to Georgia) and *R. setosus* (Newfoundland and Quebec to Wisconsin, south to Nova Scotia, New England and Pennsylvania) it would be most singular if they were, to use Bailey's phrase, "to spawn into mongrels" (and mongrels so unlike either parent), that this phenomenon should transpire only in north-central New Hampshire and that there the "mongrel" should be so constant and ubiquitous a species.

In PLATE 608, FIG. 1 is a portion of a typical leaf of a primocane, $\times 1$, from Thornton, Grafton County, New Hampshire, *Fernald*, no. 15,814; FIG. 2, junction of primocane-leaflets, $\times 5$, from 15,814; FIG. 3, portion of primocane, $\times 3$, from no. 15,814. In PLATE 609, FIG. 1 is an inflorescence, $\times 1$, from Woodstock, New Hampshire, *Fernald*, no. 11,761; FIG. 2 a flower-bud and pedicel, $\times 5$, from no. 11,761.

RUBUS (EUBATUS, § THOLIFORMES) **aculiferus**, sp. nov. (TAB. 610 et 611), arcuans deinde depressus valde ramosus, cannis vel ramis ad 3 m. longis apice saepe radicanibus; primocannis 5–10 mm. diametro aculeatis glanduliferisque, aculeis conico-subulatis rectis numerosissimis; primocannae foliis quinatis submembranaceis subtus pilosis petiolo longo aculeato glanduliferoque, foliolis ovatis longe acuminatis anguste duplicato-serratis, foliolo terminali cordato 8–12 cm. longo 5–8 cm. lato petiolulo setoso 1.5–3.5 cm. longo; floricanneae foliis ternatis, foliolis ovalibus vel obovatis grosse serratis; inflorescentiis corymbosis corymboso-racemosis vel cymosis rhachi pedicellis calycibusque villosis tomentosis, rhachi sparse setoso nec aculeato; bracteis superioribus plerumque divisis; pedicellis plerumque 2–8 cm. longis divergentibus; calycibus villosis lobis 7 mm. longis; petalis elliptico-obovatis 1.5 cm. longis 6–10 mm. latis; fructibus subglobosis 1 cm. diametro.—Abundant in northern NEW HAMPSHIRE: Coös County: sandy roadsides and thickets, Stratford, July 18, 1917, *Fernald & Pease*, no. 15,715; damp alluvial thicket, Northumberland, July 18, 1917, *Fernald & Pease*, no. 15,716; dry fields, clearings and thickets, Shelburne, September 6, 1917, *Fernald & Pease*, no. 15,765. Grafton County: abundant in woods and thickets along Eastman Brook, Thornton Gore, Thornton, July 28, 1917, *Fernald*, no. 15,710 (TYPE in Herb. Gray), August 27, 1917, *Fernald*, no. 15,810 (fruit of no. 15,710); damp thicket, borders of woods and roadsides, 1/2 mile west of Russell Pond trail, Thornton Gore, Thornton, August 27, 1917, *Fernald*, no. 15,606; borders of dry woods and recent clearings, North Woodstock, Woodstock, July 8, 1917, *Fernald*, no. 15,786, also *Fernald* in Pl. Exsicc. Gray., no. 364, August 15, 1917, *Fernald*, no. 15,837 (fruit of no. 15,786), also *Fernald* in Pl. Exsicc. Gray., no. 366 (fruit of no. 364), August 20, 1917, *Fernald*, no. 15,617. All distributed incorrectly as *R. abbrevians* Blanchard.

Rubus aculiferus, like *R. adenocaulis*, has most singularly been called *R. abbrevians*. The latter, as explained in the discussion of *R. adenocaulis*, is a very low and stiffly erect plant, with no inclination to tip-rooting. *R. aculiferus*, however, is one of the most extreme of tip-rooting species. The young and simple primocanes are at first ascending and up to nearly 2 m. in height. They then branch and rebranch, quickly making an intricate dome of fiercely prickly stems. These arching canes and branches soon reach the ground and extensively trail, often reaching a length of 2 or 3 m. From the abundant *R. adenocaulis* of Nova Scotia, the equally abundant *R. aculiferus* of the White Mountain country differs in the very sparse glandularity of its primocanes, in the essentially glandless petiolules of the primocane-leaflets, in its more corymbose or loosely cymose inflorescence with merely setose rachis and with the upper bracts mostly deeply cleft, and in the very long and loosely spreading pedicels. Its fruit is of superior quality. Extending generally north to the international boundary, *R. aculiferus* is confidently to be sought in the Eastern Townships of Quebec and also in north-eastern Vermont.

In PLATE 610, FIG. 1 is a portion of a typical primocane-leaf, $\times 1$, from Woodstock, New Hampshire, *Fernald*, no. 15,837; FIG. 2, lower surface of leaf, $\times 10$, from no. 15,837. In PLATE 611, FIG. 1 is a raceme, $\times 1$, from Northumberland, New Hampshire, *Fernald & Pease*, no. 15,716; FIG. 2, a flower-bud and pedicel, $\times 5$, from Woodstock, *Fernald*, no. 15,786; FIG. 3, portion of cane, $\times 3$, from no. 15,837.

RUBUS (EUBATUS, § THOLIFORMES) **adenocaulis**, sp. nov. (TAB. 612-615), arcuans vel deinde procumbens valde ramosus, cannis vel ramis 1-2 m. longis saepe radicanibus; primocannis 5-8 mm. diametro densissime glanduliferis plus minusve aculeatis, aculeis rectis basi latis, glandulis saepe fasciculatis numerosissimis; primocannae foliis quinatis firmis subtus pilosis petiolo 4-12 cm. longo aculeato glanduliferoque, foliolis ovalibus vel ovatis vel ovali-obovatis acuminatis anguste duplicato-serratis, foliolo terminali cordato vel subcordato 5-9 cm. longo 3.5-8.5 cm. lato petiolulo glandulifero aculeatoque plerumque 2-4 cm. longo; floricanne foliis ternatis, foliolis anguste ovalibus acuminatis; racemis elongatis rhachi pedicellis calycibusque dense villosotomentosis, rachi valde armato; bracteis superioribus integris vel subintegris; pedicellis subadscendentibus 1-2 (-3) cm. longis; calycis lobis villosis 4-6 mm. longis; petalis elliptico-obovatis 1-1.4 cm. longis 5-10 mm. latis; fructibus globoso-ovoideis 1.5-2 cm. longis.—Southwestern NOVA SCOTIA: Yarmouth

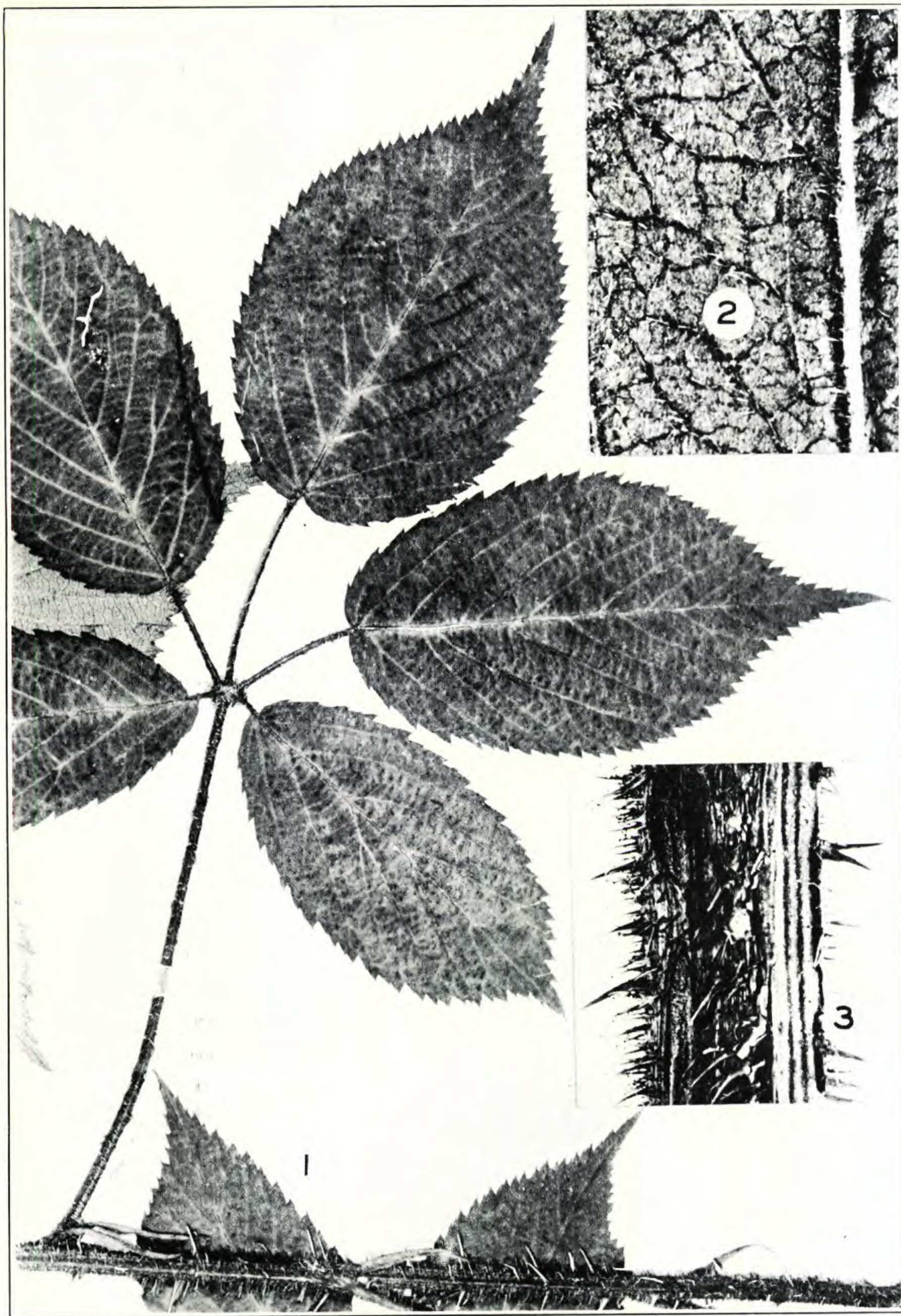


Photo. H. G. Fernald.

RUBUS ADENOCAULIS: FIG. 1, portion of primocane and typical leaf, $\times 1$; FIG. 2, lower surface of leaflet, $\times 10$; FIG. 3, portion of primocane, $\times 3$.



Photo. H. G. Fernald.

RUBUS ADENOCAULIS: FIG. 1, medium-sized inflorescence, $\times 1$; FIG. 2, flower-buds and pedicels, $\times 5$.

Co.: damp to dryish roadside thickets, Yarmouth, July 24, 1920, *Fernald, Bean & White*, no. 21,545; September 7, 1920, *Fernald, Long & Linder*, no. 21,557 (fruit of no. 21,545); rocky roadsides and borders of woods, Yarmouth, July 4, 1920, *Pease & Long*, no. 21,585 (TYPE in Herb. Gray); gravelly railroad bank, Tusket, July 21, 1921, *Fernald, Bartram, Long & Fassett*, no. 23,996; open rocky thicket near Vaughan (Tusket) Lake, Gavelton, August 13, 1921, *Fernald & Long*, no. 24,016; sphagnous thicket, Markland (Cape Forchu), July 13, 1921, *Fernald, Bartram, Long & Fassett*, no. 23,982; border of spruce swamp, Markland (Cape Forchu), August 22, 1921, *Fernald & Long*, no. 24,025 (fruit of no. 23,982); Glenwood, September 13, 1924, *J. G. Jack*, no. 3416. Shelburne County: rocky railroad bank, Wood Harbor, July 9, 1920, *Fernald, Bissell & Linder*, no. 21,616; gravelly railroad bank, Atwood Brook, July 14, 1921, *Bartram & Long*, no. 23,987; rocky thicket bordering Welchtown (Birchtown) Lake, August 2, 1921, *Fernald & Long*, no. 24,003; sandy railroad ballast, Shelburne, August 3, 1921, *Fernald & Long*, no. 24,008 (as *R. arcuans* Fern.); sandy railroad bank, Sable River, August 4, 1921, *Fernald & Long*, no. 24,011 (as *R. arcuans*). Most specimens erroneously distributed as *R. abbrevians* Blanchard.

Rubus adenocaulis is very different from *R. abbrevians*; only a desperate wish to place it somewhere accounts for its original identification (coupled with the fact that it superficially resembles the characteristic doming, arching and tip-rooting shrub of the White Mountains which Brainerd had erroneously referred to *R. abbrevians*). *R. abbrevians*, however, as its name signified, is a stiffly erect shrub only 3–6 dm. high, the canes slenderly bristly. It is the type of the very definite section *Abbreviantes* Bailey. In its doming and finally long-trailing canes *R. adenocaulis* belongs in the § *Tholiformes*. Its only close ally is the common White Mountain species which has also erroneously passed as *R. abbrevians*. In its more prostrate extreme *R. adenocaulis* might be mistaken for *R. biformispinus* Blanchard, a wide-ranging species, from Quebec to New York, south to Nova Scotia, southern New England and eastern Pennsylvania, but that species has the leaves glabrous on the lower face, leaflets of the floricanes blunt or merely acutish, the rachis of the raceme unarmed, the petals only 4–6 mm. broad.¹ The misidentification

¹ In view of the prolonged canes and the collection of the type by *Long & Pease*, it has been suggested that an appropriate specific name could be made by uniting their names by the conventional connective, *i*. The necessary distortion of spelling and the question of capital initials leads me to forego this intriguing possibility.

with *R. arcuans* was quite inexcusable, for that species has glabrous foliage with obovate primocane-leaflets, the terminal one abruptly short-tipped and with only 12–35 coarse teeth on each side; the ovate long-acuminate terminal leaflet of *R. adenocaulis* being soft-pubescent beneath and with 40–50 fine serrations on each margin.

In PLATE 612, FIG. 1 is a portion of primocane and a leaf, $\times 1$, from the TYPE, Yarmouth, Nova Scotia, *Pease & Long*, no. 21,585; FIG. 2, lower leaf-surface, $\times 10$, from TYPE; FIG. 3, portion of cane, $\times 3$, from Shelburne, Nova Scotia, *Fernald & Long*, no. 24,008. In PLATE 613, FIG. 1 is a medium-sized inflorescence, $\times 1$, from the TYPE; FIG. 2, flower-buds and pedicels, $\times 5$, from the TYPE. PLATE 614 is a larger inflorescence, $\times 1$, borne on sprout-growth, from Sable River, Nova Scotia, *Fernald & Long*, no. 24,011. PLATE 615 is a fruiting branch, $\times 1$, from Gavelton, Nova Scotia, *Fernald & Long*, no. 24,016.

RUBUS (EUBATUS, § THOLIFORMES) **adjacens**, sp. nov. (TAB. 616–618) arcuans vel deinde procumbens, cannis ad 2.5 m. longis, 3–8 mm. crassis; primocannis tholos formantibus apice liberis vel radicanibus densissime retroso-setosis plus minusve glandulosis, setis purpurascensibus vel coloratis valde imbricatis (3000–5000 per dm.); primocannae foliis coriaceis atroviridibus lucidis glabris quinatis vel ternatis petiolo 6–12 cm. longo setoso glanduliferoque, foliolis obovatis vel rhomboideis abrupte breviterque acuminatis serrato-dentatis, foliolo terminali rhomboideo-obovatis basi rotundo-subcuneato 4–8 cm. longo 2.5–5 cm. lato petiolulo piloso setifero glanduloque 0.5–1.8 cm. longo; floricanneae foliis ternatis; foliolis anguste cuneato-obovatis subcoriaceis acutis vel subacutis, acute serratis; inflorescentiis corymbiformis corymbiformi-racemosis vel cymosis rhachi pedicellis calycibusque pilosis plus minusve armatis glanduliferisque; bracteis mediis lanceolatis simplicibus vel incisibus; pedicellis arcuato-adscendentibus plerumque 1.5–2.5 cm. longis; calycis lobis plus minusve glanduloso-setosis 2.7–5 (–6) mm. longis; petalis anguste oblanceolatis 7–12 mm. longis 2–5 mm. latis; fructibus subglobosis ca. 1 cm. diametro.—Quebec to Nova Scotia, Maine and Massachusetts. QUEBEC: woods, vicinity of St. Jerome, Laurentide Mountains, July 8, 1920, *Victorin*, no. 11,233. NEW BRUNSWICK: low land, Shediac Cape, July 27, 1914, *F. T. Hubbard*; railroad embankment, Ingleside, Westfield, Kings County, August 8, 1909, *Fernald & Wiegand*. NOVA SCOTIA: Lunenburg County: rocky thickets and woods, bordering Big Mushamush Lake, August 17, 1921, *Fernald & Long*, no. 24,024. Digby County: boggy thickets, Sandy Cove, August 28, 1921, *Fernald & Long*, no. 24,030; sandy roadsides, Weymouth, August 8, 1921, *Fernald & Long*, no. 24,012; moist thickets, Meteghan, July 7, 1920, *Fernald & Long*, no. 21,551. Shelburne County: gravelly railroad bank, Atwood

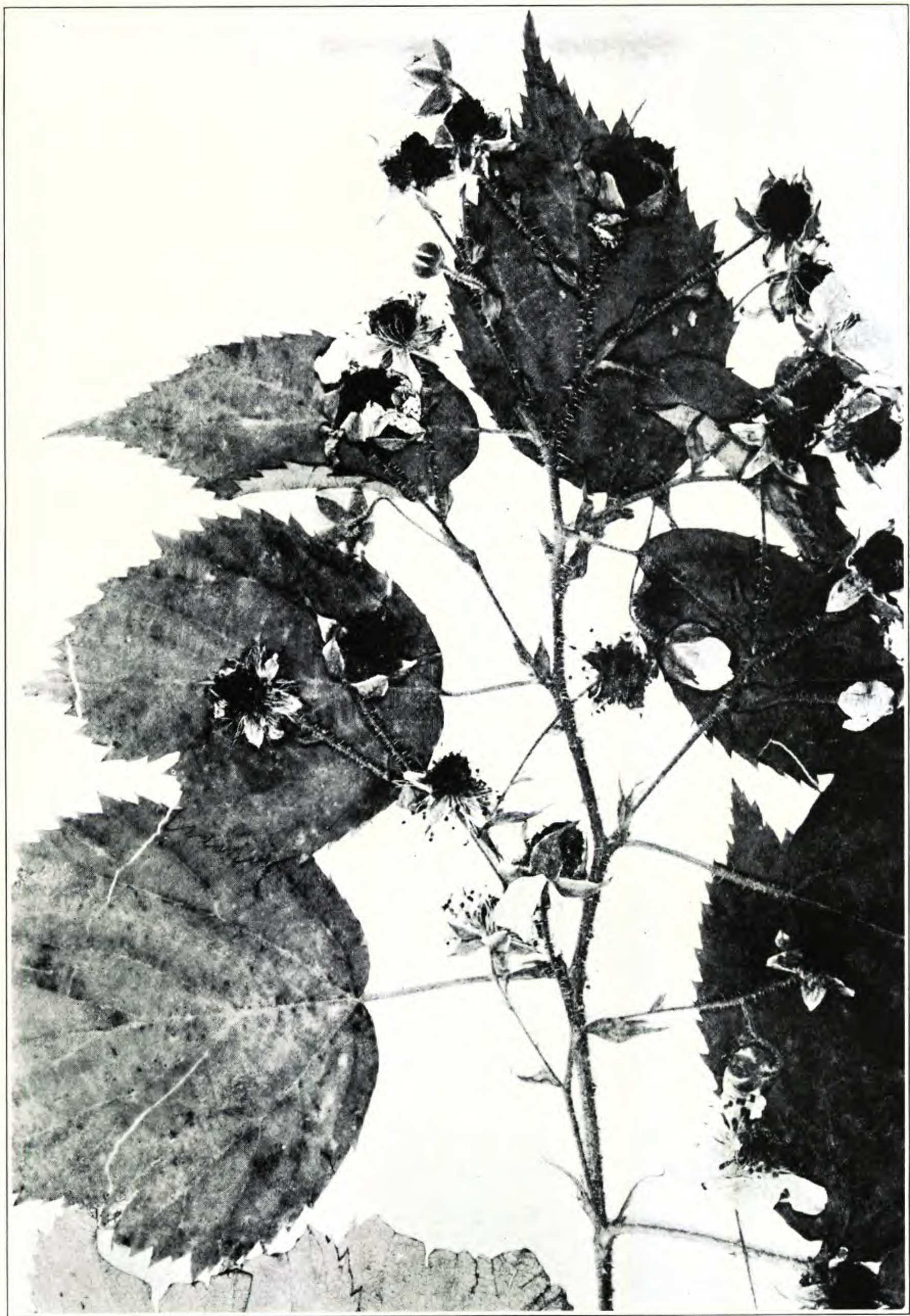


Photo. H. G. Fernald.

RUBUS ADENOCAULIS: tip of vigorous flowering sprout, $\times 1$.



Photo. H. G. Fernald.

RUBUS ADENOCAULIS: fruiting racemes, $\times 1$.

Brook, July 14, 1921, *Bartram & Long*, no. 23,988; dry rocky and gravelly slopes, Shag Harbor, July 9, 1920, *Fernald, Bissell & Linder*, no. 21,630. Yarmouth County: dry gravelly railroad embankment, Arcadia, July 12, 1920, *Pease & Long*, no. 21,542; damp to dryish roadside thickets, Yarmouth, July 24, 1920, *Fernald, Bean & White*, no. 21,546; gravelly railroad embankment, Yarmouth, September 7, 1920, *Fernald, Long & Linder*, no. 21,558; rocky and gravelly woods and thickets bordering Cedar Lake, July 11, 1920, *Fernald, Bissell, Pease, Long & Linder*, no. 21,599; gravelly thicket, Lower Argyle, August 11, 1920, *Fernald, Bissell, Graves, Long & Linder*, no. 21,619; sphagnum thicket, Markland (Cape Forchu), July 13, 1921, *Fernald, Bartram, Long & Fassett*, no. 23,983; rocky and cobbly border of Lake George, July 16, 1921, *Fernald & Fassett*, no. 23,992. MAINE: dry soil, Pembroke, July 24, 1909, *Fernald & Wiegand*; border of moist woods and thickets, Lyman, August 10, 1916, *Fernald & Long*, no. 13,902; west road to West Kennebunk, Kennebunk, July 12, 1905, *Blanchard* (as *R. hispidus*, var. *major*). NEW HAMPSHIRE: Coös County: boggy thickets and woods near Gorham, August 9, 1917, *Fernald & Pease*, no. 15,805. Grafton County: thickets, clearings and borders of woods, Lincoln, August 13, 1917, *Fernald*, no. 15,601, July 28, 1917, *Fernald*, nos. 15,706 and 15,719, August 23, 1917, *Fernald*, no. 15,838; dry or moist thickets or clearings, North Woodstock, Woodstock, August 7, 1915, *Fernald*, nos. 11,762, 11,764 and 11,767, July 6, 1915, *Fernald*, no. 11,779, August 20, 1917, *Fernald*, no. 15,614 (TYPE in Herb. Gray), July 14, 1917, *Fernald*, no. 15,750 (also in Pl. Exsicc. Gray., no. 367), August 22, 1917, *Fernald*, no. 15,751, fruit of no. 15,752 (also in Pl. Exsicc. Gray., nos. 368 and 369, primocane and fruit of no. 367), August 20, 1917, *Fernald*, no. 15,811; damp thickets and borders of woods, Thornton Gore, Thornton, August 27, 1917, *Fernald*, no. 15,609, 15,772 and 15,773. Belknap County: swampy thicket and damp border of sandy woods, Gilford, August 30, 1917, *Fernald*, no. 15,775. VERMONT: Ripton, August 19–21, 1903, *Eggleston*, no. 3241, as *R. hispidus* × *setosus*. MASSACHUSETTS: gravelly railroad bank, Concord, October 24, 1897, *W. P. Rich*. Mostly distributed erroneously as *R. jacens* Blanchard.

Rubus adjacens has passed generally as *R. jacens* Blanchard; some specimens have been identified as *R. hispidus* Michx. (var. *major* Blanchard). True *R. jacens*, however, is a relatively slender trailer with thin and pale green chartaceous primocane-foilage with lateral ribs impressed above and prominent beneath, the leaflets oblong-ovate and long-acuminate, and calyx mostly

without glands. It occurs in relatively warm areas, the type-region, Alstead, New Hampshire, along the Connecticut River, being an area with many southern trees and shrubs (*Carya* spp., *Castanea dentata*, *Quercus ilicifolia* and *prinoides*, *Sassafras albidum*, *Xanthoxylum americanum*, *Acer nigrum*, *Ceanothus americanus*, *Rhododendron roseum* and *Lonicera dioica*). It is clearly of the § *Hispidi*. *R. adjacens* is a relatively coarse species, the heavy primocanes doming, but finally becoming depressed. The material from northern New Hampshire was cited by Brainerd & Peiterson under *R. jacens* (as *R. hispidus* × *setosus*) and the error has been continued by others. It is one of the northernmost species, having its great development in western Nova Scotia, in the area of spruce forest, and in the White Mountain region, quite outside the limits of *Carya* and *Sassafras*. *R. adjacens* has coriaceous and lustrous primocane-foilage somewhat suggesting that of typical *R. hispidus* Michaux, but that has more truly evergreen leaves, with round-tipped or obtuse blunt-toothed leaflets, the floricanes-leaflets firmer and obtuse, the pedicels only minutely (instead of strongly) pilose, the calyx mostly glandless, and the soon completely trailing primocanes bear only 200–2000 (in var. *obovalis* only 0–200) bristles and glands per decimeter (against 3000–5000 in the thinner-leaved, more arching *R. adjacens*, which has acute leaflets with sharp teeth, the calyx strongly glandular). In the very copious and overlapping bristles *R. adjacens* suggests *R. permixtus* Blanchard, but the indument of the primocane in *R. permixtus* is soft and plush-like (not stiffish), the leaflets pale and velvety to the touch beneath (not dark green, coriaceous and glabrous). *R. adjacens* likewise suggests some forms of *R. trifrons*, but its much coarser and more doming canes with 3000–5000 coarse and overlapping bristles (against a more slender habit and fewer—100–500—setae) per dm., its more coriaceous foliage and its later flowering and fruiting in the same areas, set it apart. It is as late as *R. tardatus* Blanchard but that poorly understood species has the slender canes with strong prickles and few if any setae and the primocane-foilage paler and more membranaceous, with longer-tapering strong-ribbed leaflets.